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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/561,112

12/15/2005

Kazuyoshi Yoshida

P/2850-124

1786

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OSTROLENK FABER GERB & SOFFEN  
1180 AVENUE OF THE AMERICAS  
NEW YORK, NY 100368403

EXAMINER

NGUYEN, KHANH TUAN

ART UNIT

PAPER NUMBER

1796

MAIL DATE

DELIVERY MODE

04/08/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/561,112	<b>Applicant(s)</b> YOSHIDA ET AL.	
	<b>Examiner</b> KHANH T. NGUYEN	<b>Art Unit</b> 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 03 March 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-5 and 8-63 is/are pending in the application.
- 4a) Of the above claim(s) 1-5, 8-20, 36-53, 62, and 63 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 21-35, 54-56 and 58-61 is/are rejected.
- 7) ☒ Claim(s) 57 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12/15/2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>12/15/2005 and 10/26/2006</u> .                               | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Response to Amendment***

1. Applicant's election without traverse of Group II, claims 21-35 and 54-61, in the reply filed on 03/03/2009 is acknowledged.
2. This application is a 371 of PCT/JP04/08844 (filed on 06/17/2004). The amendment filed on 03/03/2009 is entered and acknowledged by the Examiner. Claims 1-5 and 8-63 are currently pending in the present application. Claims 21-35 and 54-61 are presently under examination. Non-elected claims 1-5, 8-20, 36-53, 62, and 63 have been withdrawn from further consideration. Claims 6 and 7 have been canceled.

### ***Priority***

3. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

The Applicant benefits the priority date filed on 06/18/2003.

### ***Information Disclosure Statement***

4. The information disclosure statement (IDS) filed on 12/15/2005 and 10/26/2006 have been considered. An initialed copy accompanies this Office Action.

### ***Drawings***

Art Unit: 1796

5. The drawing(s) filed on 12/15/2005 has been considered.

***Specification***

6. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

***Claim Rejections - 35 USC § 112***

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 59 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 59 recites the limitation "the dopant" in line 2. There is insufficient antecedent basis for this limitation in the claim.

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

Art Unit: 1796

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

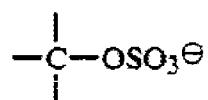
9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claims 21-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pat. 5,061,401 (hereinafter refer to as Wernet) in view of U.S. Pub. 2007/0092800 A1 (hereinafter refer to as Hinokuma).

With respect to claims 21, 22, and 25-30, Wernet teaches an electrical conductive composition comprising of an oxidized polycationic polyheteroaromatic compound and a polyanion containing sulfated alcohol groups in repeating structural

Art Unit: 1796

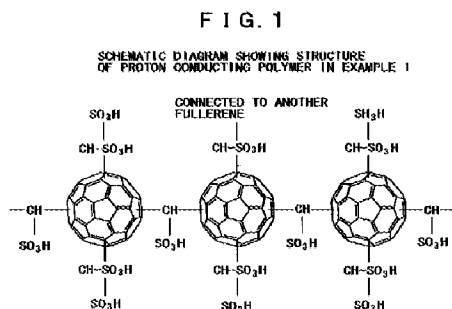
units (Abstract). Wernet teaches the polycationic polyheteroaromatic compound of pyrrole, thiophene, and aniline (Col. 2, lines 8-44). The polyheteroaromatic compound of Wernet is considered to be a conjugated conductive polymer consisting of polypyrrole, polythiophene, and polyaniline. Wernet also teaches each structural unit of the polyheteroaromatic compound containing sulfated alcohol groups (Col. 2, lines 45-55).



The polyheteroaromatic compound containing sulfated alcohol groups as suggested by Wernet is considered to having an anion group bonded with a main chain via ester group. Wernet teaches the polyanion compound is a film-forming thermoplastic polymer containing sulfated alcohol groups (Col. 1, lines 8-10; Col. 9, lines 6-12). The polyanion compound of Wernet is considered as an electron-withdrawing functional group-containing polymer. Wernet teaches the polyanion compound may contain a sulfated polyisoprene polymer (Col. 13, lines 37-40). The thermoplastic polymer may include polycarbonate, polyacrylonitrile and polyvinylidene fluoride PDVF (Col. 10, lines 28-43). The thermoplastic polymer of Wernet is considered to be a resin component other than the polymer contained in the conductive polymer. Wernet teaches electrical conductive composition is useful as an electrical conductor, electrode, cathode for batteries, electromagnetic screening material, electrically conductive filament, sensor, antistatic packing material, or conductive sealing material (Col. 15, lines 48-53).

The difference between Wernet composition and the instant invention is that Wernet does not suggest a conductive composition comprising a cluster derivative in that an anion group is introduced into carbon atoms of a cluster molecular that contains carbon as a main component.

In an analogous art, Hinokuma teaches an ionic conductor use in fuel cell, i.e. an electrical conductor, electrode, or cathode for batteries as suggested by Wernet (Abstract; [0022] and [0079]). The ionic conductor includes a polymer containing carbon cluster [0044] to improve ionic conductivity of the ionic conductor ([0021] and [0048]). The carbon cluster includes nano size particles such as carbon nanotubes and carbon nanofibers [0068], thus the cluster is considered to have a length of a major axis of 100 nm or less. Hinokuma also teaches said cluster having two or more functional groups per on cluster molecule. (See Fig. 1 and Fig. 6).



Hinokuma teaches functional group including carboxyl group --COOH and sulfonic acid group --SO<sub>2</sub>OH (Fig. 1 and [0069]). The functionalized carbon cluster of Hinokuma is considered to be a cluster derivative in that a functional anion group is introduced into carbon atoms of a cluster molecular. Hinokuma also teaches a polymer may be functionalized with a functional groups [0065] including sulfonic acid group [0051]. The

Art Unit: 1796

functionalized polymer of Hinokuma is considered to be an electron-withdrawing functional group-containing polymer as suggested by Wernet. Hinokuma also teaches a polymer binder, e.g. polycarbonate, PVDF, and polyphenylene oxide, other than the polymer contained in the conductive polymer as suggested by Wernet [0059].

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the conductive composition of Wernet by incorporating a functionalized carbon cluster in order to improved ionic conductivity of a conductor use in battery as suggested by Hinokuma.

Claims 23 and 24 are product-by-process claims and are not limited to the manipulations of the recited steps, only the structure limited by the steps. Therefore, the patentability of the product does not depend on its method of production and the claimed steps were not given patentable weight. Any difference imparted by the product by process limitations would have been obvious to one having ordinary skill in the art at the time the invention was made because where the examiner has found a substantially similar product as in the applied prior art, the burden of proof is shifted to the applicant to establish that their product is patentably distinct, not the examiner to show the same process of making, see *In re Brown*, 173 USPQ 685 and *In re Fessmann*, 180 USPQ 324.

11. Claims 31-35, 54-56, 58, 60, and 61 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pub. 2005/0009986 A1 (hereinafter refer to as Greonedaal).



With respect to claims 31-34, 54-56, 58, 60, and 61, Greoenedaal teaches an aqueous dispersion containing a copolymer of a 3,4-alkylenedioxythiophene compound and a polyanion compound (Abstract). The 3,4-alkylenedioxythiophene compound such as PEDOT, EDOT, and ADOT compounds are considered conjugated conductive polymer of a polythiophene [0037-0039]. The polyanion compound is poly(styrene sulphonated), the anion of poly(styrene sulphonic acid) [0060]. Greoenedaal also teaches other anions such as the anion of polycarboxylic acids, e.g. polyacrylic acid, polymethacrylic acids, or polymaleic acids [0059].

Although, Greoenedaal does not expressly teach the anion group is bonded with a main chain via an ester group or the anion group is bonded with the side chain. Nonetheless, the combination of conjugated conductive polymer such as 3,4-alkylenedioxythiophene compound and a polyanion compound as suggested by Greoenedaal would be capable of forming such bonds because same or substantially similar compounds are expected to have same or substantially similar functions, i.e. the anion group is bonded with a main chain via an ester group or the anion group is bonded with the side chain.

With regard to process steps in the claim 35, the prior art composition is either same or substantially similar as that obtained by the instant claimed process steps in the claims and it is axiomatic that the additional presence of process limitations, no matter how detailed, cannot impart patentability to a product. In re Pilkington, 411 F.2d 1345, 162 USPQ 145 (CCPA 1969).

Art Unit: 1796

12. In view of the foregoing, the above claims have failed to patentably distinguish over the applied art.

### ***Allowable Subject Matter***

13. Claim 57 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Currently, this is prior art found to teach or suggest the claimed polyanion which comprises a polymer which includes a substituted or unsubstituted butenylene as recited in the instant claim.

### ***Conclusion***

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to KHANH T. NGUYEN whose telephone number is (571) 272-8082. The examiner can normally be reached on Monday-Friday 7:00-4:00 EST PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on (571) 272-1302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1796

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Mark Kopec/  
Primary Examiner, Art Unit 1796

/KTN/  
Examiner  
03/25/2009